



Tri-State Mining District Oklahoma, Kansas & Missouri



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*Senior Management Review
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Tri-State Mining District Site History



- Consists of Three Areas:
 - Ottawa County, OK
 - Cherokee County, KS
 - Jasper and Newton Counties, MO
- Mining/Milling from 1850s to 1970s
- 2,500 square miles with 300 miles of Tunnels
- 500 Million Tons of Ore Produced
- 165 Million Tons of Waste over 7,600 Acres



Tri-State Mining District Site Map





Tri-State Mining District Site History



Tri-State Mining District Aerial View





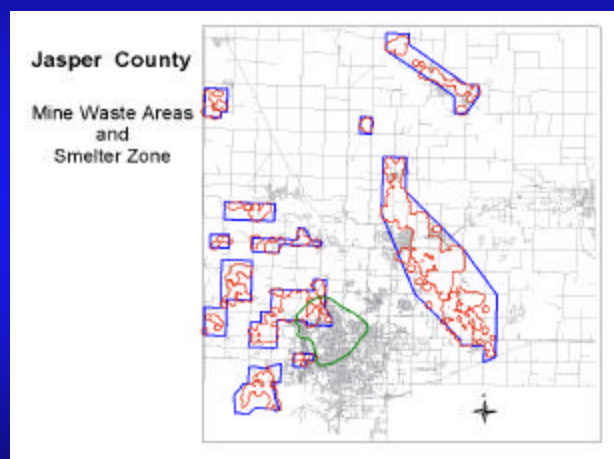
Oronogo-Duenweg Mining Belt Site Jasper County Superfund Site



- Located within the Tri-State Mining District
- 160 million tons ore production: lead and zinc
- Covers 270 square miles
- 100 million tons of waste remain on site
 - waste rock, chat, and fine tailings
- Residuals metals contain lead, cadmium and zinc
- Seventeen smelters were located within the site
 - One for over 100 years (Eagle-Picher)



Oronogo-Duenweg Mining Belt Site Jasper County Superfund Site





Jasper County Superfund Site USEPA Activities



- Site was placed on the NPL in 1990
- Many studies followed, including:
- MO Dept. of Health conducted sampling of children under the age of six
 - 14% of these children had elevated blood-lead concentrations (> 10 ug/dl)
- EPA contracted studies to determine horizontal/vertical extent of lead-contaminated soils; secondary emphasis on cadmium and zinc



Jasper County Superfund Site USEPA Activities



- EPA Studies concluded:
 - smelter fallout partially responsible for elevated blood lead;
 - yard lead levels up to 10,000ppm
 - 2,700 yards exceeding action level
- Data used by EPA to determine priorities and eligibility for time critical soil removal and subsequent remedial action
- Time critical removal occurred from March 1995 to March 1996



Jasper County Superfund Site Going Up In A Can



"Going Up In A Can"
Mary-M-Beck Mine 1934



Jasper County Superfund Site USEPA Activities



- The following were remediated during time-critical removal actions:
 - 10 day-care facilities
 - 293 residences
- Residences remediated met either the child blood lead or soil lead levels established by EPA to qualify for time-critical removal
- Community involvement and education ongoing



Jasper County Superfund Site Corps of Engineers Role



- IAG for pre-ROD technical support to COE in April 1996; ROD signed in August 1996
- First contract awarded in May 1996 for treatability study support/access agreement support
- Extremely fast paced for COE; different "mindset"
 - In-house "design"; typical plans and specs not prepared
 - Cost reimbursable contract
 - Performance based service contracting
 - Internal struggles; "out of the box" thinking required



Jasper County Superfund Site Were we on the Right Track?





Jasper County Superfund Site Project Factors/Issues



- Magnitude of Contamination
 - Number of residences exceeding action level
- Soil Disposal Options
- Contracting Strategies
 - Labor Force
- Community Acceptance of Remedy



Jasper County Superfund Site Project Approach



- Team Effort between EPA, MDNR, COE, and Contractor
- Establish On-Site Disposal Area
- Early Community Involvement
 - Continued Advisory Group, Partnerships
 - Local Health Department coordination
- Use Contract with Incentives to Earn Fee
 - Hire local personnel
 - Use XRF for sampling



Jasper County Superfund Site Corps of Engineers Role



- COE Accomplishments:
 - Entire contracting period (request for proposal to award) 60 days - with 2 week delay for \$\$
 - Entire process; from Pre-ROD Support to RA Field Start - 180 days
- Many concurrent actions
- This was the **first cost-reimbursable, award fee** contract performed by the Kansas City District



Jasper County Superfund Site Lessons Learned



- Design:
 - BCO Certification/Real Estate
 - Formal Plans/Specs vs. PBSC Work Statement
- Construction:
 - Relationship with Contractor - COE "in the Contractor business"; *we WERE and we stayed that way*
 - Oversight/Involvement required at cost-reimbursable sites by the Corps



Jasper County Superfund Site Some Days Were Tough



"Men And Their Handies Underground"



Jasper County Superfund Site Lessons Learned



- Award Fee Plan - based heavily on cost per property, quality, and production rate
 - Measured at negotiated timeframes during remediation (end of each 3 month period)
 - Low Base Fee; to highly motivate Contractor
 - EPA and Corps rated the Contractor
- Stressed Use of Local Personnel; Local Union Operators
 - No Travel Costs
 - High Quality Workers



Jasper County Superfund Site Lessons Learned



- Utilized XRF Extensively
 - Trained Personnel in Use
 - Allowed for Instant Results; No Impact to Production
- Reporting/Cost Tracking tailored to EPA and COE needs:
 - Kept Clear and Concise since everything asked for EPA paid for!
- Entire Team constantly strives to improve efficiency - and lower overall costs
- Using GIS to maintain master DB/Drawings



Jasper County Superfund Site Excavation Operations





Jasper County Superfund Site Backfill Operations



Jasper County Superfund Site Final Prep & Hydroseed





Jasper County Superfund Site Current Status

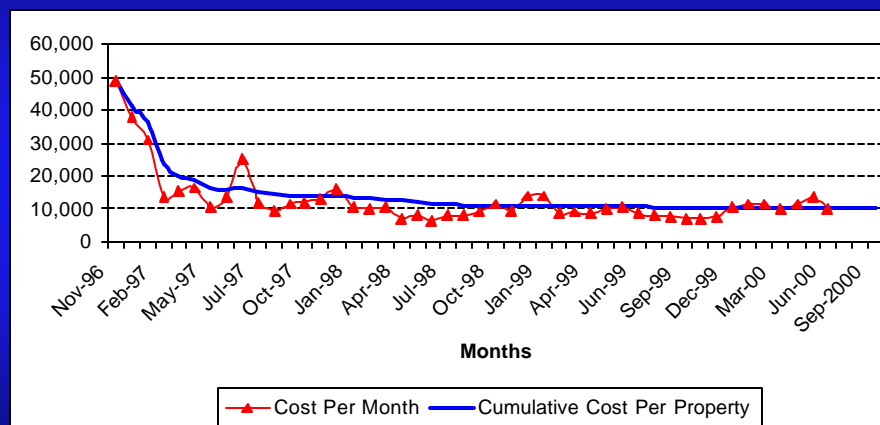


STATUS

- Duration - 48 Months to Date
 - November 1996 RA Start
- Total Homes Completed 1940
- Ave. Cost Per Home \$10.2K
- Total Amt. Paid to Contractor \$18.7M
- Corps Costs (S&A, EDC) \$ 1.4M
 - 6.9% of RA Costs



JASPER COUNTY COST PER PROPERTY

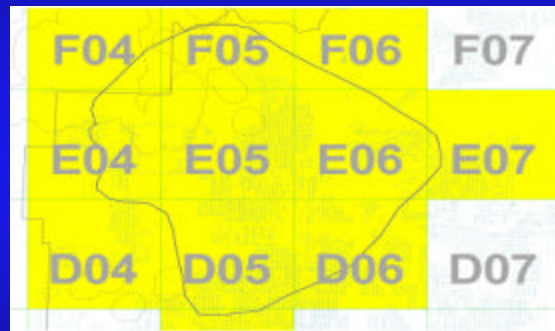




JASPER COUNTY GIS SITE MAP STRATEGY



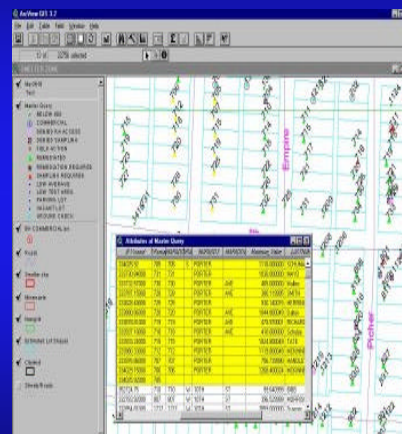
- "Smelter Zone"
- Sectional Maps for Quick Reference
- Combined Multiple DB's into Master DB
- Query Capable for all Property Status



JASPER COUNTY GIS

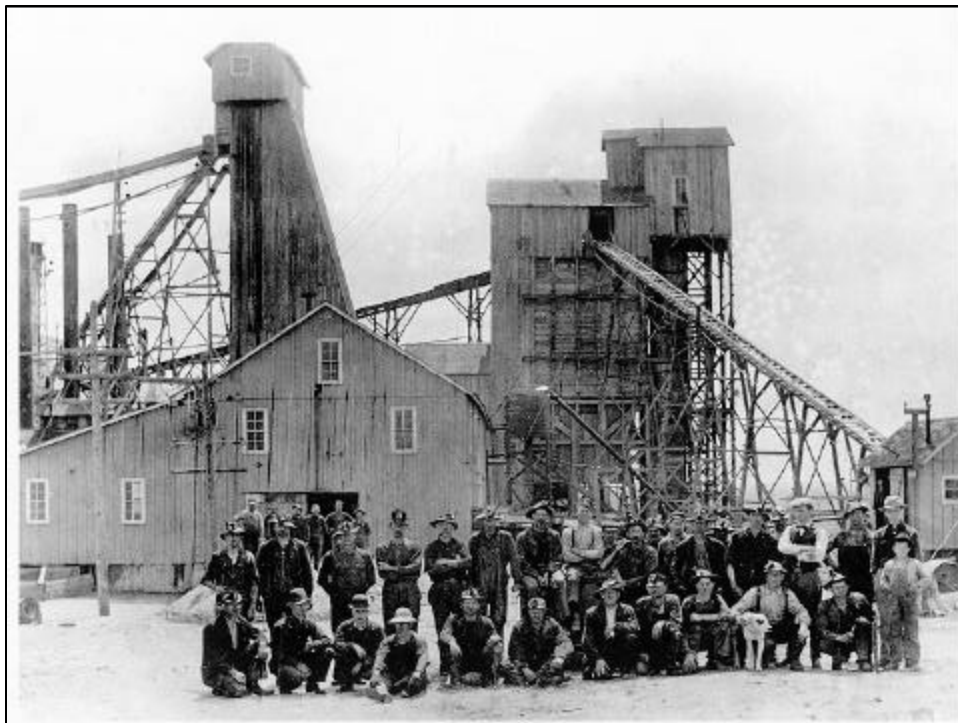
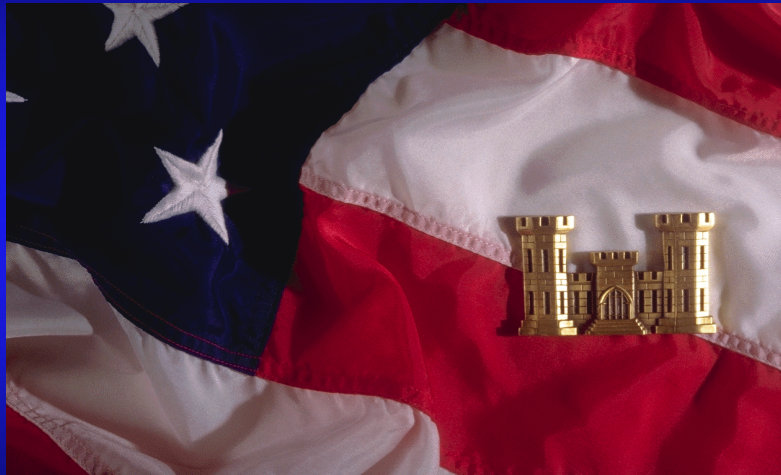


- GIS Provides Access DB linked to Arcview Files
- Drawings Updated as DB is Updated
- Quick Graphical Views of Query Results
- Placing on Secure Web Server as a Test; Available to Project Personnel





Questions?





TRI-STATE MINING DISTRICT Oklahoma Portion



- 40 Square Miles Designated as Part of Tar Creek Superfund Site
- Includes Picher, Cardin, Quapaw, Commerce, and North Miami
- 60 Million Tons of Chat Remain
- Most of Area is in Tar Creek Watershed





Complicating Factors

Oklahoma Portion of Tri-State Mining District

- Indian Land - 8 Tribes
- State Land - Ottawa County Reclamation Authority
- Mine Drainage Surfaces in Oklahoma
- Poor Drainage in Several Communities



Cleanup Strategy

- Surface and Ground Water Contamination - OU1 - 1984 ROD
- Mining Waste in Residential Yards - OU2 - 1997 ROD
- Non-Residential Properties (Waste Piles, Tailings Ponds, Industrial Properties) - OU3+ - Under Study



Post-Mining Environmental Problems - Water



- 1979: Mine Drainage Surfaces
- Governor's Task Force
- Concerns with Contamination of Surface Water and Ground Water
- 1983: Tar Creek Site Listed on Superfund National Priorities List



State/EPA Superfund Actions to Address Water Issues



- 1984 Remedy
- Surface Water Diversions
- Plugging Abandoned Wells
- Recompletion of City Water Wells



Post-Mining Environmental Problems - Soil



- 1994: IHS blood lead screening showed elevated levels in 35% of children
- 1995: EPA initiated removal of lead-contaminated soil
- Approximately 2,100 properties contaminated





Residential Soil Cleanup General Approach



- Removal at High-Access Areas and Yards > 1,500 ppm Pb Began June 1996
- ROD Issued September 1997
- Remedial Action Began January 1998





Removal Effort

- Began June 1996
- EPA used I AG with COE
- COE used TERC contract mechanism
- 250 Properties Addressed
- Average Cost \$24,100 per Property



Remedial Action

- Remedial Program Assumed Lead in January 1998
- 1,800 properties remained to be addressed
- Decided to pilot Performance-Based Contracting Approach
- Wanted smooth transition and maximum removal/remedial consistency



Performance-Based Approach



- Used I AG with COE for consistency
- COE used TERC contract vehicle
 - **Same contractor as removal**
- EPA/COE work group developed contract approach in Fall 1997
- Regions 6 & 7, HQ, and COE Tulsa and Kansas City Districts had input
- Was first Superfund PBC pilot approved by OMB



Areas of Emphasis in Developing Performance Standards



- Quality of work - ensuring technical specifications were met
- Minimizing time spent on each property
- Smooth transition from removal to remedial

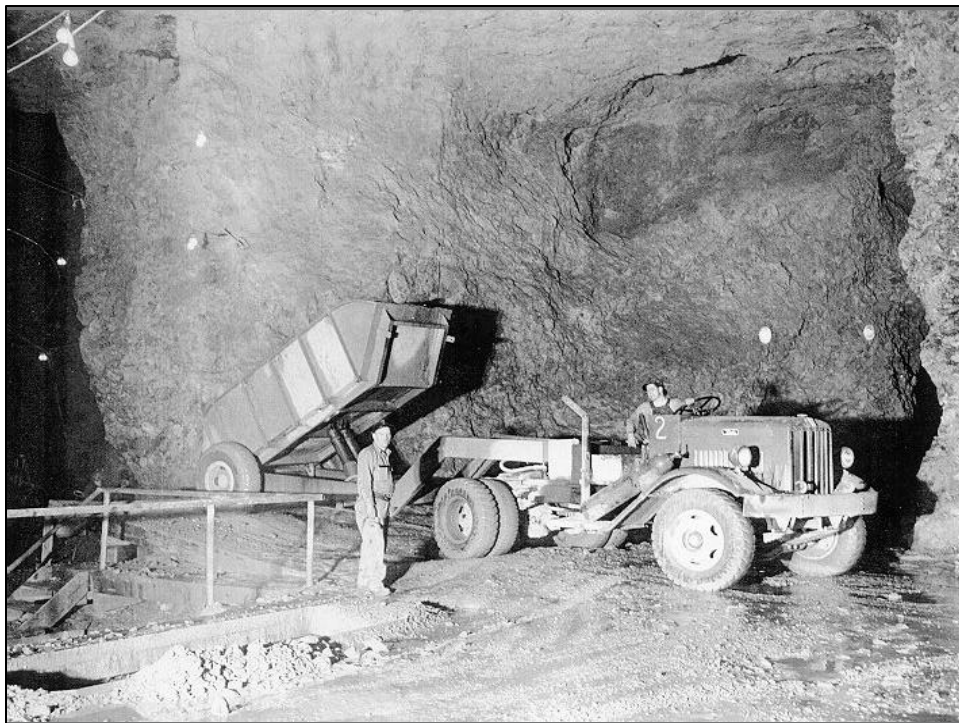




Initial Results

Timeframes to complete individual properties were cut in half

- Reduced costs per property were projected to save \$10 million over the life of the project
- Quality of work better than removal phase

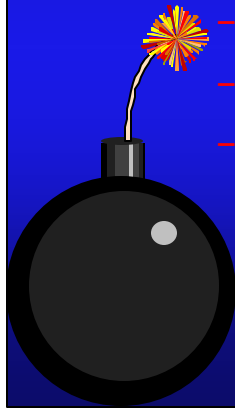




Wake-Up Call!



- Congressman Coburn's surprise 6/29/99 Press Release:



- \$23,000 per property at Tar Creek
- \$10,000 per property at Joplin
- Allegations of fraud, waste, and mismanagement





What Happened???



- COE Internal Review
- Region 6 Internal Review
- Discussions with Region 7 and COE Kansas City



Major Problem Areas



- Contract was structured to ensure quality of work, not efficiency of operation
- Oversight of contractor was lacking
- Procedures carried from removal to remedial phase led to inefficiency
- Response to homeowner complaints was lacking





Major Problem Areas (continued)



- Comparison to removal costs gave false sense of security
- Procedural changes to save costs were not always implemented
- I AG lacked incentives for good project management



"Duration" Standard



- Complete properties within 9 work days (more days allowed for removals of more than 250 cu. yd.)



Problems with "Duration" Standard



- Wet-weather days are not counted; non-work days are not counted; during wet season, properties can remain "open" for over a month and still meet the "9 day standard"
- All-or-nothing measure - no incentive to complete in less than 9 days; 10 days is the same as 6 months



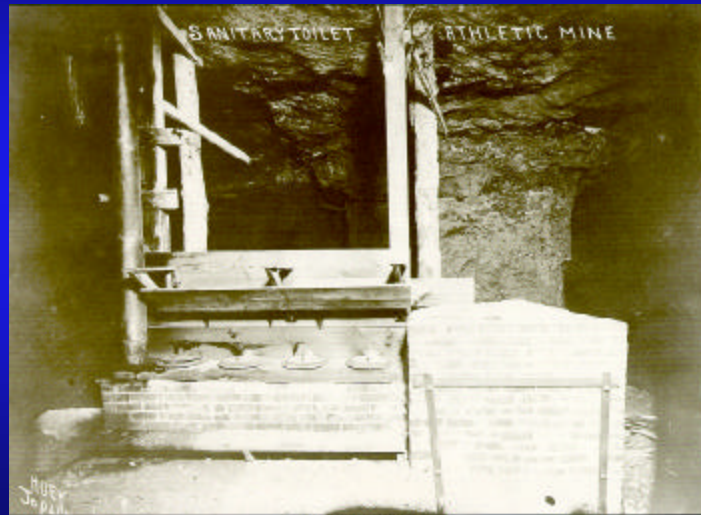
Possible Alternative



- Average completion time per property (total calendar days from start to finish, including wet weather days and non-work days)



Lessons Learned



"The Necessities Of Life"
Athletic Mine



Lessons Learned - PBC



- Crafting of Performance Standards language is critical - you're "locked in" after it's finalized
- Include performance standards which create incentives for the contractor to save money and be efficient
- Measure averages over time rather than property-by-property performance
- Focus on end results



Lessons Learned – Oversight



- Effective oversight of construction contractors is critical
- Continuity can work against you - what's good for removal may not be good for remedial
- Take extent of local hiring into account when developing oversight plans



Other Lessons Learned



- Don't use removal phase as yardstick for cost comparison - look to other remedial sites
- Complaint response is critical to success
- Beef up incentives/penalties in IAGs



Questions?

